CLAIMS

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- 1. A ball-nut assembly comprising:
- a) a ball nut including a radial through slot and including an outer surface having a first portion, having a ledge radially recessed from the first portion and at least partially bounding the through slot, and having an undercut wall connecting the ledge and the first portion; and
- b) a crossover member having a flange supported by the ledge and having a crossover-grooved portion disposed in the through slot, wherein the flange has at least one deformed portion contacting the undercut wall of the outer surface of the ball nut.
- 2. The ball-nut assembly of claim 1, wherein the ledge has an annular shape, surrounds the through slot, and annularly supports the flange.
- 3. The ball-nut assembly of claim 2, wherein the undercut wall has axially-opposing first and second end portions, and wherein the at-least-one deformed portion includes first and second deformed portions respectively contacting a corresponding one of the first and second end portions of the undercut wall.
- 4. The ball-nut assembly of claim 3, wherein the first portion has a cylindrical shape.
- 5. The ball-nut assembly of claim 4, wherein the crossover member has a flat outward facing surface disposed below the first portion of the outer surface of the ball nut.
- 6. The ball-nut assembly of claim 5, wherein ball nut is a vehicle-brake-pad-driving ball nut.

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- 7. A ball-screw-and-ball-nut assembly comprising:
- a) a ball nut including an inside helical groove, including a radial through slot, and including an outer surface having a first portion, having a ledge radially recessed from the first portion and at least partially bounding the through slot, and having an undercut wall connecting the ledge and the first portion;
- b) a crossover member having a flange supported by the ledge and having a crossover-grooved portion disposed in the through slot, wherein the flange has at least one deformed portion contacting the undercut wall of the outer surface of the ball nut:
- c) a ball screw including an outside helical groove and disposed inside the ball nut; and
- d) a plurality of balls contacting the crossover-grooved portion of the crossover member and a portion of the inside and outside helical grooves.
- 8. The ball-screw-and-ball-nut assembly of claim 7, wherein the ledge has an annular shape, surrounds the through slot, and annularly supports the flange.
- 9. The ball-screw-and-ball-nut assembly of claim 8, wherein the undercut wall has axially-opposing first and second end portions, and wherein the at-least-one deformed portion includes first and second deformed portions respectively contacting a corresponding one of the first and second end portions of the undercut wall.
- 10. The ball-screw-and-ball-nut assembly of claim 9, wherein the first portion has a cylindrical shape.
- 11. The ball-screw-and-ball-nut assembly of claim 10, wherein the crossover member has a flat outward facing surface disposed below the first portion of the outer surface of the ball nut.

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- 12. The ball-screw-and-ball-nut assembly of claim 11, wherein ball screw is an electric-motor-driven ball screw, and wherein the ball nut is a vehicle-brake-pad-driving ball nut.
- 13. A method for making a ball-nut assembly comprising the steps of:
- a) obtaining a ball nut including a radial through slot and including an outer surface having a first portion, having a ledge radially recessed from the first portion and at least partially bounding the through slot, and having an undercut wall connecting the ledge and the first portion;
- b) obtaining a crossover member having a flange and a crossovergrooved portion;
- c) disposing the crossover member from outside the ball nut to have the flange supported by the ledge and the crossover-grooved portion disposed in the through slot; and
- d) deforming the flange creating a staked portion of the flange which contacts the undercut wall of the outer surface of the ball nut.
- 14. The method of claim 13 also including after step a) and before step c) the step of aligning the ball nut on a locating arbor which simulates balls placed around a ball screw.
- 15. The method of claim 14, wherein step c) includes aligning the crossover member on the locating arbor.
- 16. The method of claim 15, also including between steps c) and d) the step of checking the radial position of the crossover member with a position indicator.
- 17. The method of claim 15, also including between steps c) and d) the step of clamping the crossover member against the locating arbor.
- 18. The method of claim 15, wherein step d) includes using a stake punch.